

COST AND MANAGEMENT

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**A Report on Techniques
Leading to Control and
Measurement of Performance...**

By Malcolm S. Sutherland

**Trends in Canadian Corporate
Financing Since 1948 . . .**

By J. D. Campbell and W. D. Gainer

**Designing A System for
Properly Accounting . . .**

By John A. Watson

LOSS

***Official Journal of
The Society of Industrial and
Cost Accountants of Canada***

Oct. 1956

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- devising and giving effect to better management methods, and
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Cost and Management

VOL. XXX

OCTOBER

No. 9

A REPORT ON TECHNIQUES LEADING TO CONTROL AND MEASUREMENT OF PERFORMANCE

By MALCOLM S. SUTHERLAND 334

Mr. Sutherland is Secretary-Treasurer of the Burlington Steel Company Limited, Hamilton, Ont. and prior to this was with Price Waterhouse & Co. He became a member of the Institute of Chartered Accountants of Ontario in 1937. He is past chairman of the Hamilton and District Chartered Accountants Association and past president of the Hamilton Control, Controllers Institute of America. He was also chairman of the 1954-1955 Committee on Canadian Affairs, Controllers Institute of America.

TRENDS IN CANADIAN CORPORATE FINANCING SINCE 1948

By J. D. CAMPBELL AND W. D. GAINER 343

The authors, both active contributors to the student R.I.A. programme in Edmonton, are faculty members of the University of Alberta. Prof. Campbell is Head of the Department of Accounting and Prof. Gainer is Associate Professor in the Department of Political Economy. A graduate of Queen's University, Prof. Campbell is a member of the Institute of Chartered Accountants in Ontario and Alberta, a registered member and councillor of the Society of Industrial and Cost Accountants of Alberta and a consultant to the Alberta Department of Health in the implementation of standard accounting in the hospitals throughout the province. Prof. Gainer graduated from the University of Alberta originally, having taken his graduate work in Economics at Iowa State College and the Massachusetts Institute of Technology. He has pursued special academic and consulting interests in the fields of economic development and finance.

DESIGNING A SYSTEM FOR PROPERTY ACCOUNTING

By JOHN A. WATSON 350

The Office Manager of Tee-Pak, Inc., Chicago, Ill., Mr. Watson has been responsible for budgets, systems and procedures and office management since joining the company in 1948. Prior to that he was an accounting equipment and systems salesman for Remington Rand, Inc. This article appears through the courtesy of the National Association of Cost Accountants.

REGULAR DEPARTMENTS

EDITORIAL COMMENT	322
C. & M. ROUND-UP	327
BOOKS IN REVIEW	330
STUDENT SECTION	357

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Editorial Comment . . .

THE NATIONAL FINANCES

Although the Budget of the Federal Government is generally recognized in business circles as a most important indicator for the economic status and prospects of the country, the main interest usually centres around the changes in the Income Tax Act and other tax statutes. The complicated structure of the National Budget makes it a difficult object of study even for the economist and usually frustrates the layman who attempts to gain some insight into the give and take represented by the Budget figures.

All the more important then is the publication of the Canadian Tax Foundation which now appears for the third time in a substantially expanded form under the title "The National Finances—An analysis of the programme of revenues and expenditures of the Government of Canada—1956-57". The booklet aims at an interesting and readable presentation of the rich material contained in the mass of government documents which either make up the Budget or should be studied in connection therewith.

The chapter headings "The 1956 Budget in Outline", "The Budget and the Economy", "The Tax Structure—1956", "Expenditure Programme—1956", "The Cash Position", "Crown Corporations", indicate the layout and sequence of the presentation. When reading the 1956 Budget in outline in September, one realizes how fast the economic picture changes and how fast presentations of this kind may become dated.

The industrial accountant who is involved in the preparation of budgets and is increasingly faced with the task of preparing forecasts for periods exceeding one year—five and even ten-year forecasts are taken quite seriously—may ask naively why the National Budget is usually presented after the period has started for which it is prepared. He may also wonder why governments stop at the one-year budget although their planning, by necessity, must exceed so short a period in undertakings like the Trans-Canada Highway and similar public projects. Though the issue is probably wrought with political implications, the accountant who has learned a lot from the governmental technique of budgeting for his industrial applications could perhaps be helpful by suggesting that governments may now undertake the preparation of budgets for periods exceeding one year, particularly that they may start and complete the preparation of the budgets farther ahead of the period for which the plan is laid down.

The tables presented in "The National Finances" are very informative and many have been especially compiled by the Tax Foundation. One of the tables (24) shows that for the current fiscal year, the corporation income tax will be the biggest single source of revenue

EDITORIAL COMMENT

(\$1,315,000,000) out of a total budgetary revenue of \$4,763,000,000—one more reason for the industrial accountant to familiarize himself with the Government's expenditure programme.

In the discussion of the expenditure programme, it is stated that the National Government is the largest organized activity in our national economy. It is also stressed that government activities lack an acceptable measuring stick which the private enterprise has in its profit and loss account. Usually, the expenditures are listed in the Budget by Government departments but the Tax Foundation publication efficiently re-groups them in a functional breakdown, an object analysis, and as a more detailed examination of the Budget classification, the Federal Government is being studied as an employer of labour. Table 25 shows expenditures on specific functions as a percentage of total expenditures and clearly demonstrates that defence, although in a diminishing degree, is still by far the biggest functional expenditure (38.7%). Table 26, "Total Expenditures by Standard Objects and Special Categories", shows total figures for the specific objects, for instance, "Materials and Supplies" or "Buildings and Works Including Land", regardless of departmental appropriation. This permits the enterprise interested in government work to appraise with one quick glance the trend in the specific outlays; for instance, "Construction or Acquisition of Buildings and Works, Including Land" is budgeted with \$392,000,000 against \$359,000,000 for the preceding fiscal year. "Office Supplies, Stationery, Equipment and Furnishings" show a slight decrease (\$20.3 million against \$20.4 million). In the "Construction or Acquisition of Equipment", the Budget provides for \$587,000,000 as against \$689,000,000 for the 1955-56 year. These totals may be quite significant, particularly if the interested parties study the breakdown between defence and other than defence by standard objects, which is presented in tables 27 and 28.

The new health insurance proposals are concisely dealt with under the heading of "Health, Welfare and Veterans' Programmes".

It is interesting to notice that "for want of a better generic title", the Tax Foundation publication calls the expenditures created by the geographical layout of our nation "National Overhead Expenditures". These items include railways, canals, airways, shipping and freight subsidies, the C.B.C., and the National Film Board. In the past, we read that outlays in support of the "holding together" policies have contributed very substantially to the creation of the National Debt.

By and large, governmental activities are accounted for on a cash basis but we learn from the discussion of "The Cash Position" that there are inflows and outflows of cash of a non-budgetary nature which influence the effect of the Government's operation on the economy. From table 77, it appears that, in spite of the budgetary deficit estimated at \$52,000,000, the net amount from non-budgetary transactions

COST AND MANAGEMENT

of \$102,000,000 makes \$50,000,000 cash available for the fiscal year, with a net increase in unmatured debt of \$247,000,000, and a net increase in cash balances of \$297,000,000, a fact which one could hardly have gathered from the usual newspaper and magazine reports.

A new section on "Crown Corporations" is most informative for those who deal with these entities in their businesses. These corporations are listed under three headings—"Departmental Corporations", "Agency Corporations", and "Proprietary Corporations". In the first category, is the Unemployment Insurance Commission, in the second the Defence Construction (1951) Limited, and in the third the C.B.C., the St. Lawrence Seaway Authority and the Trans-Canada Air Lines. The financial relationships between the Government accounts and these corporations are aptly described for each operation. Tables 78 and 79 show loans to and investments in Crown Corporations totalling \$2,000,000,000 and the return on these investments for the past two fiscal years.

A short index helps the searcher for information in finding the pertinent facts.

There is little doubt that the members of the Canadian Tax Foundation who receive this publication will derive a great deal of most interesting information on our National Government and economy from the perusal of its carefully prepared 148 pages. The Foundation deserves to be congratulated on this addition to its valuable series of publications.

PERSONALS

G. M. Ferguson, R.I.A., has been appointed Vice-President, Finance, of British Columbia Packers Ltd.

Donald B. Grant of the Vancouver Chapter has been appointed Vice-President in charge of the new Eastern Division of Neon Products of Western Canada Limited.

John Schenderling of the Vancouver Chapter has been appointed Comptroller of the C.U. & C. Health Services Society.

E. L. Otto, R.I.A., Honorary Treasurer of the Canadian Society, has been appointed Vice-president and General Manager of Moirs Limited, Halifax. Mr. Otto is a past President of the Society of Industrial and Cost Accountants of Nova Scotia.

Medal Winners . . .



I. A. CROSS

MISS M. E. McDOUGALL

W. G. STEPHEN, B.Com.

The Society announces with pleasure the winners of the two national awards for high achievement in the final examinations.

Two students tied for the H. M. Hetherington Gold Medal, awarded for the highest marks in the Advanced Cost Accounting examination across Canada; W. G. Stephen, B. Com., of Calgary and I. A. Cross of Vancouver. The D. R. Harrison Gold Medal for the highest marks in Canada on the Fundamentals of Cost Accounting examination was won this year by Miss M. E. McDougall of Toronto. Miss McDougall was also the winner of the H. P. Wright Gold Medal for the highest standing in the Province of Ontario in this subject.

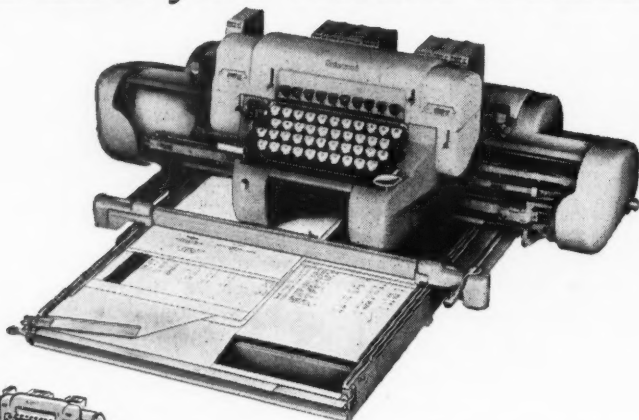
Mr. Stephen is an articled student with the firm of Winspear, Hamilton, Anderson & Co., Calgary. A native of Calgary, he received his B. Com. degree from the University of Alberta in 1954.

Mr. Cross is Plant Accountant and Office Manager of the John Wood Company Limited, Vancouver. He attended junior and high schools in Vermilion, Alberta and Winnipeg, Manitoba, and after service in the R.C.A.F., joined the Winnipeg office of the John Wood Company Limited in 1947 where he spent five years prior to his transfer to Vancouver.

Born and educated in Scotland, Ontario, Miss McDougall joined Parker's Dye Works & Cleaners Limited in Toronto in 1946 and has been Office Manager there since 1952. She holds the M.C.I. degree of the Canadian Credit Institute.

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C. & M. Round-Up . . .

By N. R. BARFOOT

LOOKING AHEAD

New Engineering Schools are needed, say 12 deans of engineering departments in Canadian universities. There will be about 1,700 engineering graduates this year to fill about 5,000 vacancies.

—o—o—

'57 Cars will be longer, lower and flashier, with 14 inch tires instead of 15 inch. At least one may have a fuel injection system. Various changes in suspension and shock absorbers are planned. Who will have what is a guess. Anyway, we shall all know this month or next.

—o—o—

Punch Card Shopping may be coming. The customer will punch a special card with the items he wants, then a sorting machine activates the movement of merchandise from store rooms to the customer's car.

—o—o—

Inflation cannot be controlled to any extent in Canada says the London Financial Times. The persistent inflow of capital makes inflationary tendencies more difficult to correct.

—o—o—

Shopping Centres are increasing. Five years ago there was one, there are now 56 in Canada, 25 of which are in Ontario and there will be 100 by the end of 1957.

—o—o—

Pensions may be portable some day. Labour unions are quite interested in pension credits being carried from one industry to another while the worker is in the same union. The effect would be to deter workers from leaving union shops for non-union shops.

—o—o—

EXECUTIVE HEALTH

A study of some 600 presumably healthy executives revealed that more than half of them had a disease they didn't know about.

The largest percentage of newly discovered ailments were concerned with the arteries and heart.

One out of every six showed an incidence of hypertension or arteriosclerotic heart disease.

Most conditions though serious will respond favourably to medical or surgical treatment.

A comprehensive initial examination followed by corrective action plus periodic check-ups is industry's best answer to the growing loss of qualified executives through sickness.

—o—o—

CHARACTERISTICS OF A GOOD EXECUTIVE

A recent survey by the Young President's Organization shows the following important points about good executives.

Flexibility—Regardless of their training and experience, they are receptive to new ideas, able to adapt themselves quickly to changing conditions, and withstand setbacks without losing drive and enthusiasm.

COST AND MANAGEMENT

Depth—In the absence of one member of the executive team, other members are equipped to carry on his operations.

Organization—The members of a good executive team each build their own efficient division of the company with a minimum of routine supervision.

Temperament—They function by balancing and controlling two essentially conflicting impulses. First, the desire to maintain and improve the status quo, and second, the impulse towards growth, new products, new markets, and new businesses.



HOME CONSTRUCTION

House construction should go into 1957 with a 70,000 unit carry over.

This is less than the '56 figures of 80,000 units but substantially greater than other recent years.

N.H.A. Financing is down about 22% mainly because the banks are doing 60% less business than last year.

There is about the same amount of Trust and Life money around and outside financing, credit unions, owner-builder are making up the difference.



TRADING STAMPS

The Trading Stamp is about to hit Canada.

The Trading Stamp is widely used in the United States and is a way of obtaining premiums.

Grocery Stores, Drug Stores, Gas Stations, etc. are popular outlets.

A Multi-million Dollar Trading Stamp Company is coming to Canada and plans to build five 50,000 square foot warehouses to supply premiums.

It plans to promote the use of stamps by direct mailing of free stamps and premium catalogues to every householder.



ON THE PERSONAL SIDE

Color in T.V. in '58—only a few sets are tuning into U.S. Colour Broadcasts for a few hours a day. Present Canadian cost at \$700-\$800 is too high.



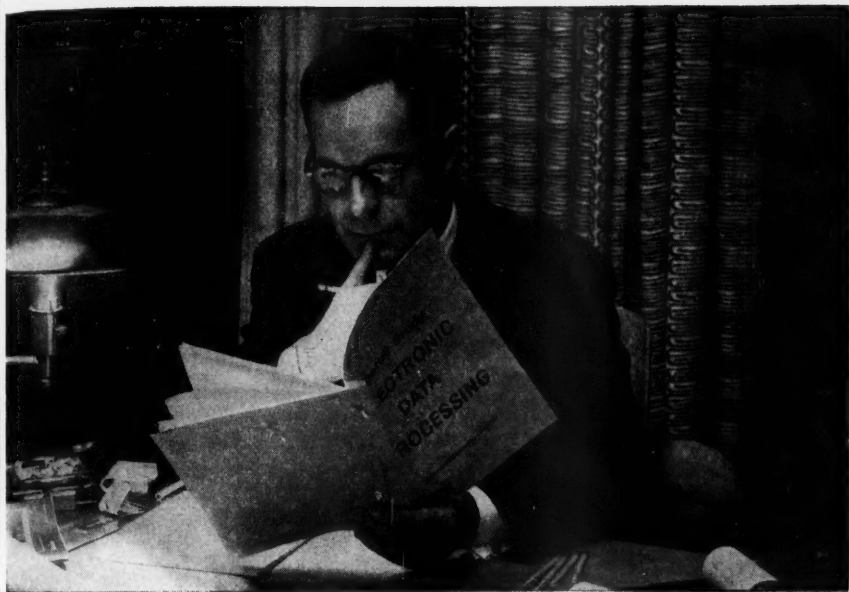
Creative Thinking or "brainstorming" seems to be the latest intellectual gimmick in industry. Rules are: (a) no ideas are criticized, (b) the wilder the idea the better, (c) quantity production of ideas is what's wanted.



The magic in compound interest is still there, for example, you can double your original capital in 12 years by compounding at 6% per annum.



Personal Loans through the Chartered Banks are a headache—say the banks. Money is tighter than most people realize so that there just isn't enough money at the moment to accommodate everyone. The accounting on small loans is quite appalling and one official states there is no money made until the loan reaches \$500.00. Small loans however, are a sort of loss leader since the borrower usually leaves his account at the bank.



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*During 1955, IBM announced a major data processing improvement every two weeks.

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PROCESSING**

Books in Review . . .

PROCEEDINGS OF THE INSTITUTE ON OPERATIONS RESEARCH FOR BUSINESS AND INDUSTRY

Dept. of Engineering, University of California, Los Angeles, Calif.—\$5.00

Reviewed by **PATRICK J. ROBINSON**,
*Co-ordinator, Marketing Research,
Imperial Oil Limited.*

The written proceedings of "The Institute on Operations Research for Business and Industry", as presented at the University of California last year, makes stimulating and informative reading for both progressive management and interested professional specialists. Seven papers are presented and include helpful illustrations.

Three of the papers are completely non-technical challenges to modern management. They seek recognition and acceptance of the vital and dynamic role that is already being played in business decision-making by scientifically qualified Operations Research (O.R.) advisors.

The titles of these papers are aptly descriptive of their content:

1. Operations Research in Business and Industry—A report to Management—Russell L. Ackoff.
2. Operations Research—The Scientists' Invasion of the Business World—Dean E. Wooldridge.
3. The Basic Processes of Operations Research and Their Relations to Management—M. L. Hurni.

The first mentioned paper poses seventeen frequently asked "businessman's questions" and provides concise answers intended to help the reader grasp just where and how O.R. may help his own company. This amounts to an exciting progress report of recent O.R. accomplishments set forth in an appealingly provocative fashion.

The second paper listed enlarges somewhat on the scientist's role in business and touches on comparisons with various military applications and contrasts O.R. work with other commonly available consulting services.

The third paper really spells out the methods and basic philosophy of Operations Research and specifically how it applies to business operations. The author uses clear expository style to describe the terms of reference and methods of attack used on a wide range of problems. This is easily understood and compellingly presented in point by point form.

The remaining four papers provide a variety of excellent cases and their solutions. These can give a "feel" (even if only skimmed) of O.R. in action for the uninitiated and good food for thought, and enough detail for clear understanding, for those already actively engaged in this work. The titles of these papers are also some-

BOOKS IN REVIEW

what descriptive and the material varies usefully in methodology and presentation:

1. **The Role of Mathematics in Operations Research**—Andrew Vazsonyi.
2. **Linear Programming is Helpful in Solving Gasoline Refining and Blending Problems**—Gifford H. Symonds.
3. **Operations Research in the Field of Surface Transportation**—Roger R. Crane.
4. **An Analysis of a Warehousing and Distribution Operation**—William R. Fair.

Even the casual reader need not shy away from these four fine papers because of their use of mathematics. The information and procedures are described simply so that a good knowledge of arithmetic and some recollections of the principles of introductory algebra should see an interesting reader through. However, in the first of these technical articles the footnotes on pages ten and eleven appear reversed and the paragraph under Fig. 3 reads "requires two A_1 's" and apparently should read "requires one A_1 ". Apart from this and a lack of detailed notation on a few illustrations (which were probably pointed up more fully during original personal presentation), many readers should find these papers both interesting and profitable.

Summing up—all who really care about, and can influence their firm's profitability, should be aware of the thought-leading content of the first three management oriented papers. Even those with some prior introduction to Operations Research will find a fresh point of view and rewarding ideas. Also, the more technical papers will illustrate that a new breed of business professionals is with us. These men are scattered and few in number to-day. They are not basically accountants, nor engineers, nor lawyers, but something new to put muscle and meaning into "scientific" management. Electronic computers are only one of their many powerful new aids to better decision-making.

STATISTICAL SAMPLING FOR AUDITORS AND ACCOUNTANTS

By Lawrence L. Vance and John Neter. John Wiley & Sons, Inc., New York. \$9.00.

Reviewed by MILTON HOWARD, C.A.,
Winnipeg, Manitoba.

As business grows in magnitude the amount of paper work covering financial transactions and internal operations increases by leaps and bounds and one of the essentials of modern business is an adequate control of costs, productions, inventory and turn-over.

To this end this book attempts to outline methods of procedure which could be followed by internal or public accountants and auditors with a view to obtaining reliable information from current records and accounts without entailing too great an expenditure of time and effort.

COST AND MANAGEMENT

While much of the data is highly technical, the authors have given a number of practical suggestions and illustrations which would be of great assistance to those who agree that statistics, properly applied, can be helpful in charting one's course.

The basis of arriving at conclusions from sampling methods is explained in great detail and attention is drawn to the pit-falls which must be avoided if reasonably accurate conclusions are to result. The fact that "human error" is a great factor in arriving at a proper judgment is duly stressed. The application of a number of suggested procedures is outlined at length and for those with an enquiring mind, the book should prove both interesting and helpful.

ELEMENTARY ACCOUNTING

By Arthur W. Holmes, C.P.A., University of Cincinnati; Gilbert P. Maynard, Ph.D., C.P.A., State University of Iowa; James Don Edwards, Ph.D., C.P.A., Michigan State University, and Robert A. Meier, C.P.A., Loyola University, Chicago, Richard D. Irwin, Inc., Homewood, Illinois.

Reviewed By W. J. McCREIGHT, C.A., F.C.I.S., R.I.A.

This book with its thirty chapters is modern in its presentation of the subject matter in that the student is immediately introduced to corporation accounting, commencing with the Balance Sheet, Income Statement, and then proceeding to the Account, the Ledger, and the Trial Balance.

The text, as its name implies, does not assume any previous knowledge on the part of the student, yet at the end of Chapter Three the full accounting cycle of procedure has been presented: Journalizing, Posting, taking a Trial Balance, preparing Working Papers, and closing the Books.

As stated in the preface, each chapter has questions and problems, and these problems have been carefully integrated with the text material, and graded from easy to difficult. It would seem that if a student is to master his subject, then a considerable amount of time must be spent in working out problems. In order to cut down on this previously necessary time, the text is accompanied by working papers which cover Chapters one to 15. These working papers are very complete with column headings and account names, and should reduce the amount of time expended in writing up practice sets, and solving problems.

Chapter nine deals with Notes and Bills of Exchange, and as the subject is based on American procedure, some slight modification is indicated to conform with Canadian practice.

The text is well-written, easily read, and stresses that "accounting principles are fundamental laws or truths".

The book should be a valuable addition to current accounting literature.

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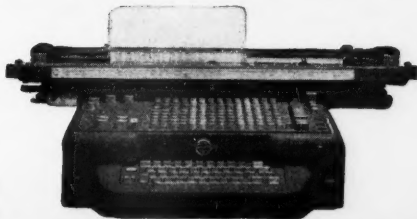
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A Report on Techniques Leading to Control and Measurement of Performance* . . .

By MALCOLM S. SUTHERLAND, C.A.,
*Secretary-Treasurer,
Burlington Steel Co., Ltd.,
Hamilton, Ontario.*

Not so long ago management's total concept of control was embodied in three simple questions: "How much are the sales? What is the profit? What is the bank balance?" In this paper the author describes some of the control techniques that have developed from these basic questions and explains how rough rule of thumb can be replaced with more logical and effective tools for measuring the performance of controls.

THIS PAPER is in the nature of a report dealing with the techniques available for control and discussing the problem of measuring performance. For simplicity I am going to refer specifically to an industrial company. My remarks, however, should have general application. I propose to tackle the subject with three objectives in view:

1. Re-emphasize the Concept of Control.
2. Indicate the rapid development of control techniques.
3. Discuss measurement of overall performance, with some reference to productivity.

If we are to provide depth to our discussion, I should at the outset refer to two practical or administrative aspects of our work which are probably lurking gently in the back of all our minds.

First, in looking ahead for the next five to ten years, with the application of electronics or other comparable methods to the processing of business data, we will be required to be more certain than ever that the techniques selected for our own particular company are the most suitable. Valuable information formerly found impracticable to produce will be available.

Secondly, it is now apparent that business will employ a much greater variety of well organized data in its decision making. Its usefulness will depend on our being able to cut down the lag in its availability.

In other words, the full impact of electronic procedures will open up a whole bagful of new tricks or techniques; at the same time production of business data will be demanded in a fraction of the time now allowed. We have entered a new stage, where the leisurely handling of historical information is to be replaced, by a demand for timely, crisp, co-ordinated business data.

Concept of Control

The word "control" has a subtle difference in meaning to each of us. In its application to management it implies, of course, an orderly

*This report was delivered at the 35th Cost and Management Conference of the Society of Industrial and Cost Accountants at Mont Tremblant, Quebec, in June 1956.

CONTROL AND MEASUREMENT OF PERFORMANCE

method of organizing work, with appropriate checks to insure that differences or deviations from a designated pattern are disclosed. To some people "control" simply means restraint. On the other hand, if we are to secure better results we should favour those control techniques—which like vitamins—are useful in stimulating people.

To enlarge on the picture for a minute or two, we must fix in our minds that control is a management tool; it is not the exclusive property of the accountant.

It has been recently expressed that:

"The essence of control is action which adjusts operations to a predetermined standard, and its basis is information in the hands of managers."*

The elements of this concept of control are three in number:

1. Establishment of a plan.

This becomes a standard or the budget. Devising a plan or a budget should be done by the one who is responsible for the results.

2. Comparison of actual results with the plan.

This is familiar as the reporting system which puts information in the hands of managers.

3. Decision on action to be taken.

Any corrective action should be taken by the functional manager setting up the planned objectives and standards as expressed in the budget.

It should be clear under this concept that the Controller and the Industrial Accountant are concerned with measurement, and in areas where they are capable, to offer interpretations or alternative courses of action. The complete control process is only possible where the responsibility for setting the objectives and taking any necessary corrective action rests in the hands of the functional manager.

In no sense am I trying to belittle the role of the accountant in this control process. I think you will agree that it is largely due to the efforts and ingenuity of the accountant, with his analytical ability, that managers in business are now in a position to accept their responsibility for more objective planning and more enlightened control.

As an illustration, you will all realize that in the absence of a plan being committed to paper in the shape of a formal budget, the accountant of necessity has had to provide the rudiments of the control process, through using techniques such as "variable or flexible budgets". In this way he was able to provide effective tools of measurement in the absence of a sales budget, or of knowing the volume of business.

*From an article in *Dun's Review and Modern Industry* Jan. 1956 by Douglas S. Sherwin, Rubber Chemicals Division, Phillips Chemical Company.

Techniques Leading to Control

In order to discuss the techniques available for control, I think it would be helpful if we briefly traced their development and in this presentation you will recognize that the accountant has played an impressive role, with real continuity of purpose.

In the growth of a company we have all experienced that old "rules of thumb" have been supplemented and supplanted by more effective tools of measurement, leading finally to the framing of forecasts and budgets.

In the good old days, you will probably remember, for example, that three simple questions were asked:

1. How much are the sales?
2. What is the profit?
3. What is the bank balance?

Essentially, the questions remain the same, the answers to-day are more elaborate.

1. How Much are the Sales?:

Taking this question "How much are the sales?", it was found that one simple figure was not sufficient. Why were the sales up and why were the sales down? So we entered an analytical stage of classifying the sales by product. Many other types of analyses were developed such as geographical distribution, type of customer, etc. according to the type of business.

Sales managers began to establish their quotas and in trying to fit the quotas to the market, market surveys, sometimes very elaborate in form, were developed. At this point we are now entering the control stage where, on the basis of market surveys, forecasts are being made and formalized into a sales budget. Such terms as sales mix, saturation point, etc. are now part of the sales vocabulary. With the establishment of this sales budget the full control process became possible.

2. What is the Profit?:

In answer to this second question, we have all realized that the one simple figure of profit, whilst the most important single indicator of the progress of a business, is not sufficient because the constant changes in the profit figure raised a whole battery of questions demanding factual answers.

To find suitable explanations we entered the analytical stage again whereby costs were allocated to work centres, and made it possible to determine profits by products, using various approaches including standard costs.

The distribution of overhead according to various volumes of business was a problem. The direct cost technique was available to meet this situation; as an alternative some firms adopted other methods such as a "multiple bracket system" of standard costs.

CONTROL AND MEASUREMENT OF PERFORMANCE

Marginal income or variable profit, by products again has been a very useful feature and most helpful in deciding on realistic selling prices.

With the allocation of cost by responsibility centre emerged one of the important techniques, that of "cost control".

We should not forget to mention the technique of the rate of return on invested capital which has been a useful means of judging comparative profitability inside and outside the business, and has led to the opening up of fresh viewpoints in a management's review of its operations.

Inventory Valuation

Before leaving the subject of profits, I would like to mention a very serious situation which is facing Canadian industry today, particularly where large inventories of raw materials are carried. I refer to the failure to distinguish between (a) profits arising from changes in price levels and (b) cash profits arising from the operations for the year. The inclusion of these non-cash or unrealized profits in the reporting of income is unfortunate. They should not be included in the earnings to which labour must refer in arriving at its annual wage demands. In the second place the practice has resulted in paying out in cold cash nearly half of these unrealized profits in income taxes. In spite of industry's attempt to hold prices down, there is no doubt that both of these factors are contributing to the current increases in selling prices of our products and the inflationary spiral we are desperately trying to prevent.

3. *What is the Bank Balance?:*

In answer to this simple question, many companies have found it necessary to look into the future so as to conserve their cash resources to meet heavy periodic annual demands. In the analytical stage cash forecasts were prepared, but these were not always based upon known plans of operation. When operating and other budgets were established the cash forecast became a more realistic tool in financial control.

Other techniques developed at an early stage were estimates of capital expenditures to insure that cash needed for current purposes was not being used for plant improvements or extensions, without arranging for additional financing. In the planning stage the "rate of return" on capital invested for new projects has been useful in deciding on the most beneficial capital expenditures. With the preparation of the capital expenditure budget, a real control stage has been reached.

It is interesting to note that some firms now are using ten year forecasts prepared from average growth rates. Also as an example of planning one of the large Canadian municipalities now prepares a five year budget of capital expenditures. These show the confidence that the larger firms have in the planning and control process.

COST AND MANAGEMENT

In this brief analysis, I have attempted to indicate just a few of the techniques that lead to control, and I think we must agree that there has been a very rapid and in many cases ingenious development to meet the problems of business. To repeat, I do not think that anyone should underrate the contribution that the accountant has made to the establishment of an orderly and methodical approach in solving business problems.

To summarize, it was about 65 years ago that double entry accounting* was adopted in earnest. During the 20's after the first world war, standard costs became recognized. As we approached the 30's budgetary control was taking shape. Some people have commented that direct costs would have had a more general adoption in the 40's, had it not been for the second world war. We have seen very significant developments since 1945 in which the direct cost or marginal income procedure has gained some momentum. Perhaps the next forward step may be the measurement of productivity which I propose to deal with in the next section.

Measurement of Overall Performance

General

If you agree with the concept presented so far, it is apparent that the basic role of the accountant is in the area of measurement of business data. Equally important is the presentation of these measurements to the functional managers. Also we should not forget that a good part of the accountant's time is devoted to the methods employed in organizing the business data to make the reporting mechanism practical and effective.

To digress for a moment, it seems to me that the accountant is not only the leg man, he is also the editor, the press agent as well as the publisher, of a valuable monthly magazine, with an annual supplement.

To pursue this question of measurement a little further, we should perhaps build up well defined rules highlighting the principles of measurement. Some, which may be included are:

1. A measurement should assist the functional manager in making better decisions.
2. Measurements are an aid but not a substitute for business judgment.
3. They should be kept simple in form and number.
4. They should be flexible, capable of expansion or contraction, and also of use in appraising the present as well as future results.

Productivity

One of the measurements that we are now being called on to consider is productivity.

*See George O. May — "New Frontiers for Accountancy" — The Journal of Accountancy June 1955.

CONTROL AND MEASUREMENT OF PERFORMANCE

Productivity is an illusive word and it is hard for us to find a simple forthright definition. A common and simple understanding of productivity seems to be "a rate of physical output". For our own particular purpose of measurement however, the goods have to be brought to the market place and their value established before we can attach a dollar value. What we are probably getting at is "economic productivity". It might well be that we should simply try to understand the implications of productivity at this time rather than to define it.

One of the best recent expressions on productivity is the following:

"A measurement of productivity is a measurement of the ability of a business to utilize its human, capital, and material resources to the best advantage and in the best balance."

"In general, productivity may be measured by relating the "output" of goods and services to the "input" of human effort and of other factors of production. Accordingly, an improvement in productivity means that output is increased without a corresponding increase in input."[†]

Without further generalization, I would like to come down to a specific example.

Measurement of Overall Performance Using the Technique of Value Added in Manufacture

A. The Method:

Output:

Sales value of production	\$ 4,005,000
---------------------------------	--------------

Deduct:

Raw materials	\$ 1,420,000	
Fuel and power	151,000	
Outside services and operating supplies	323,000	
		<hr/>
		1,894,000
		<hr/>
		2,111,000

Value added in manufacture

Wages and salaries	1,392,000	
Selling and general expense	103,000	
Depreciation	126,000	
		<hr/>
		1,621,000
		<hr/>
Profit before tax	\$ 490,000	

[†]From a talk in Chicago by Mr. Robert W. Lewis, Manager, Measurement Services, Accounting Services Division, General Electric Company; presented at the 1954 Annual National Conference, Controllers Institute and published January 1955 by the Controllershship Foundation.

COST AND MANAGEMENT

B. The Measurement:

In current (actual) dollars.

Year	Hours of Work	Man Hours *	Total Dollars *	Value Added Per Hour of Work	Per Man Hour
1	4392	809.5	\$2,111	\$481	\$2.61
2	4416	786.9	2,279	516	2.90
3	4029	707.1	2,138	531	3.02
4	3873	705.4	2,859	738	4.05
5	3867	736.9	3,111	805	4.22
6	3822	714.3	3,249	850	4.55

* Expressed in thousands.

C. The Measurement:

In constant (1948) dollars.

Year	Prices Indices		Adjusted Value Added	
	Wholesale (a)	Consumers (b)	Hours of Work Using (a)	Man Hour Using (b)
1	100.0	100.0	\$481	\$2.61
2	102.6	103.7	503	2.80
3	108.9	107.4	488	2.81
4	123.9	119.0	596	3.40
5	116.5	120.8	691	3.49
6	113.8	119.8	747	3.80

Notes:

1. "Profits due to changes in price levels" have been excluded from all calculations on the statement.
2. In Section A a re-alignment of the profit and loss account will be noticed which emphasized "the value added in manufacture". Also it is assumed that sales have exactly matched production.
3. In Section B "hours of work" refers to the operating hours of a major department. For example, with approximately 2,000 hours available for one shift operation each year, you will see this is based upon a two shift operation.
"Man hours" refers to the total man hours of the hourly rated employees.
The "value added per hour of work" and "per man hour" is simply a division of the total dollars in the third column by those in the first and second columns respectively.
4. In Section C figures shown for price indices are those released by D.B.S. converted to a 1948 base which have been applied to figures above in Section B to arrive at the adjusted values shown in columns 3 and 4.

CONTROL AND MEASUREMENT OF PERFORMANCE

The Significance of This Approach

In "value added" we have another measurement tool in addition to one so commonly used, such as unit or dollars sales. Some prefer its use because it eliminates the material and power components from the sales price.

It illustrates the concept that "value added in manufacture" represents a "fund" from which wages and salaries, as well as income tax and dividends can only be paid.

The accent in this concept is on the enterprise, as represented by its management and employees, in making more effective use of the facilities, provided out of capital, by increasing output.

There is some real justification about the belief that in "value added", which excludes the cost of wages and salaries we have found the tool with which to begin in our measurement of productivity.

Basic Answers Provided

By the application of the very simple statistical data shown, we can answer perhaps the most basic questions facing the Chief Executive of a business:

- a. How are the facilities of the company being used and is this use improving? The answer is given in Section B under "value added per hour of work".
- b. Is the labour force being led properly and is it responding? Again in Section B "value added per man hours" provides the information.

Our answer is complete when this information is put in the form of constant dollars, (Section C) which we must do to correct for the effect of changes in price levels.

Labour's Share of Production

One of industry's real problems is the annual wage negotiation. Is our measurement of value added any help here? I think it is.

Wages tend to rise or fall in line with changes in productivity—or "values added in manufacture".

This then is the clue to the possibility of real increases in employee earnings. Unless there are increases in productivity, made possible not only by better machines, but also by improved methods and accompanied by more skilled direction, there can be no increase in real employees' earnings.

If wages go up or hours of work are reduced without a corresponding increase in productivity, selling prices of our products must be increased to meet the deficiency—and the purchasing power of our dollar ultimately declines to balance the economic equation.

References

You may well ask what justification lies behind the presentation

COST AND MANAGEMENT

that I have made on "value added" or productivity. I would like to refer to the following:

- (a) Since 1924 the Dominion Bureau of Statistics has been publishing in the Canada Year Book, a series of statistics on Manufactures which it calls "Net Value of Products" which is "computed by subtracting the cost of fuel and electricity and the cost of raw materials from the gross value of products".* In addition annual wages and salaries paid are shown in relation to this series.
- (b) There is the stimulating work of Allen W. Rucker, Cambridge, Mass., particularly his "Progress in Productivity and Pay" published in 1952. His studies are based on "Production Values" which for our purposes are identical to "Value Added in Manufacture".
- (c) In February 1955 Mr. Ben Fairless, then Chairman of the Board of United States Steel Corporation, gave a challenging talk entitled "Our One Indispensable Weapon", in Johnstown, Pa. He refers to facts brought out in Mr. Rucker's 1952 study and comments on the findings that "the real wages of the worker have advanced at almost the same rate as the improvement in productivity".
- (d) General Electric Company in exploring the possible indices to express productivity have reported—"In lieu of sales billed as an expression of output, we have been studying the possibility of using 'value added'."†

To Conclude

We have come a long way from the three simple questions mentioned earlier, about sales, profits and bank balance to our final questions of "How am I doing: in using my plant facilities; in creating a responsive working force; and—how are changes in price levels affecting my company?"

*Canada Year Book 1955, page 634. †Ibid: Robert W. Lewis.

FOR FURTHER READING

- A PROGRAM OF FINANCIAL PLANNING AND CONTROL, AMA Financial Management Series No. 103.
FORGING THE TOOLS OF COST CONTROL, by R. C. Perry, N.A.C.A. Bulletin, Jan. 1955.
ACCOUNTANT'S PLACE IN CONTROL FUNCTION, by A. M. Hartogensis, N.A.C.A. Bulletin, Dec. 1955.

CANADIAN COSTING INFORMATION WANTED

U.K. student of the Institute of Cost and Works Accountants, age 28, interested in costing developments in Canada, would like to correspond with Canadian accounting student.

Please contact

Society of Industrial and Cost Accountants
31 Walnut St. South Hamilton, Ontario

Trends in Canadian Corporate Financing since 1948 . . .

By J. D. CAMPBELL and W. D. GAINER

What are the future patterns of corporate financing in Canada likely to be? These can be determined to some extent by the trends they have taken in recent years. In the following timely report, the authors examine some significant financing trends based on analyses of the financial operations of a sampling of Canadian companies.

DURING the post-war era of rapid unprecedented business expansion, the pre-occupation of management has had to shift gradually to matters of finance. Whereas problems of reconversion, procurement and sales orientation have slowly receded, those of financing sustained expansion still exist. It seems timely now to review certain changes in the national pattern of corporate financing in recent years, and to relate these changes to possible developments in the future.

The scope of this report has been arbitrarily limited to deal with two major aspects of financing, viz., the various ways in which profits have been utilized over the period of study, and the ways in which fixed asset expenditures have been financed from various sources. The selected relationships reported below constitute a partial summary of results based on a large sample of Canadian corporations. In particular, the reported trends stem from the process of aggregating the results of an individual sources and application analysis carried out on the financial operations of each company represented in the sample. The sample itself over the years reported has consisted of some 280-300 Canadian companies. Based on a criterion of gross capital expenditures, sample companies have contributed some 25-30% to the total for the nation. Based on an aggregate profit criterion, companies in the sample over the period studied have represented roughly 45% of corporate profits-after-taxes for the nation as a whole. Hence the sample represents a large segment of Canadian corporate operations.

1 Pattern of Profit Utilization

In any study of the ways in which corporate funds have been utilized, it is necessary to begin with certain arbitrary but nonetheless realistic assumptions concerning the priorities of use. In this study the individual company analysis with respect to the use of funds was based on the following assumed priorities: Where profits were present it was assumed that management would look to profits first to cover dividends, secondly to finance increases in working capital, thirdly to finance fixed asset expansion beyond amounts provided by depreciation, and lastly to cover net redemptions of funded debt, preferred shares and common shares. That is to say, to the extent that profits of the company were sufficient to cover some or all of these purposes, the profit figure was allocated according to the above order of priorities.

Profits and Dividends

Table 1 illuminates the trend in dividend payments out of profits for the sample companies since 1948.

COST AND MANAGEMENT

Table 1
Dividends Paid Out of Profits for Sample Companies

Year	Dividends Paid \$000	Per Cent Dividends of Profits %
1948	266,189	45.6
1949	280,436	51.3
1950	290,233	48.4
1951	340,606	52.0
1952	350,375	56.6
1953	335,901	55.4
1954	363,529	52.8
1955	403,630	47.2

The data highlights a managerial policy of retaining consistently some fifty per cent of earnings for purposes other than the payment of dividends. While profits and dividend payments have been increasing in total amounts the proportion of profits paid out in this fashion has remained steady, and has even shown some tendency to decline of recent years. It must be noted in passing, however, that such a pattern varies considerably and consistently as between the various industrial groupings included in the sample. No attempt will be made in the present report to discuss companies between industry groups.

Profits and Increases in Working Capital

Table 2 indicates the extent to which reported profits (after dividends) were applied towards increases in working capital by the companies examined over the eight year period. For comparative purposes, Table 3 sets out increases in working capital financed from all sources.

Table 2
Increases in Working Capital
Provided Out of Profits for Sample Companies

Year	Increases in Working Capital \$000	Percent of Profits %
1948	214,092	36.7
1949	185,495	34.0
1950	214,041	35.7
1951	160,002	24.4
1952	109,899	17.7
1953	142,160	23.5
1954	195,890	28.4
1955	279,348	32.6

TRENDS IN CANADIAN CORPORATE FINANCING SINCE 1948

Table 3
Increases in Working Capital Provided from
All Sources for Sample Companies

Year	Increases in Working Capital
	\$000
1948	292,911
1949	198,246
1950	297,929
1951	188,208
1952	-23,336
1953	110,225
1954	162,732
1955	330,015

Immediately obvious from Tables 2 and 3 is the startling improvement in corporate liquidity during 1955. This was due not only to a high level of earnings and a high proportionate retention of earnings for this purpose, but also to unprecedented access to external sources of funds through new financing.

A more detailed analysis of the pattern of change in working capital from year to year has revealed one thing positively, viz., that the size of the cash dividend distribution from year to year has not been greatly affected by any limiting considerations of non-liquidity nor has it been influenced by large increases in the cash and investment position in particular years. Dividend policies in general have become sufficiently stabilized and sluggish as to bear little direct relationship to changes in either the profit or liquidity position of the business in a particular year.

Profits and Expenditures on Fixed Assets

Table 4 indicates the extent to which reported profits were available to finance net additions to fixed assets after providing for dividends and increases in working capital.

Table 4
Expenditures on Fixed Assets Provided
Out of Profits for Sample Companies

Year	Expenditures Out of Profits	Percent of Profits	Percent of Total Capital Expenditures
	\$000	%	%
1948	82,481	14.1	14.6
1949	52,032	9.6	10.8
1950	55,843	9.3	12.0
1951	112,474	17.1	14.1
1952	137,830	22.2	14.4

COST AND MANAGEMENT

1953	110,781	18.2	11.0
1954	120,271	17.4	13.9
1955	108,748	12.7	11.6

On the basis of an assignment of profits to cover dividends and increases in working capital first, it is apparent that from 10-20% of profits remained for the purpose of financing net expenditures on fixed assets. Viewed against the actual size of such capital expenditures, this profit was sufficient to cover from 10-15% of the requirements in each year.

Profits and Redemption of Bond and Share Capital

The extent to which profits of sample companies were sufficient to achieve the prior purposes discussed above as well as some net debt and/or share redemption (beyond re-issues) is set out in Table 5.

Table 5
Net Redemption of Funded Debt and Share Capital
Out of Profits for Sample Companies

Year	Net Redemption of Bonds \$000	Net Redemption of Preferred \$000	Net Redemption of Common \$000	Percent of Profits %
1948	13,739	837	17	2.2
1949	24,966	3,411	391	5.3
1950	26,626	6,597	68	5.6
1951	17,060	3,307	..	3.0
1952	15,850	571	..	2.6
1953	14,132	875	..	2.4
1954	15,129	3,492	..	2.7
1955	21,333	4,323	..	3.0

It is apparent that profits were sufficiently great in the case of some companies to provide for prior assignments and to leave as well some small proportion of profit (approximately 2.5%) available for net bond and/or share capital redemptions.

In the case of bond redemptions alone, however, this amount of available profit bulked fairly large as a proportion of total bond redemptions (from 11 to some 30% of total redemptions over the period). These figures would indicate a gradual strengthening of shareholders' total interest in assets held—although not necessarily on a percentage basis. The latter would depend on the pattern of new financing in providing for *net* growth in the capital structure.

II Pattern of Financing Expenditures on Fixed Assets

This phase of the report consists chiefly of an examination of the various sources of funds available to management in financing the extensive capital outlay programme characteristic of the post war years.

TRENDS IN CANADIAN CORPORATE FINANCING SINCE 1948

Again in the analysis of individual company statements, the assumption was made that the required funds were provided in the following order, viz., the depreciation allowance; sale of fixed assets; retained earnings (after any increase in working capital); issues of funded debt, preferred shares and common shares; and finally any decrease in working capital where present.

Internal Sources of Funds

Table 6 summarizes the internal sources of funds utilized (excluding sales of assets and decreases in working capital) for the purchase of fixed assets.

Table 6
Principal Internal Sources of Funds
Utilized for Expenditures on
Fixed Assets for Sample Companies

	Depreciation		Retained Earnings		Both Sources	
	Amount	Percent Total Expendi- tures	Amount	Percent Total Expendi- tures	Percent Total Expendi- tures	
Year	\$000	%	\$000	%	%	
1948	196,093	34.7	82,481	14.6	49.3	
1949	220,830	45.2	52,032	10.8	56.0	
1950	214,969	46.3	55,843	12.0	58.3	
1951	290,267	36.5	112,474	14.1	50.6	
1952	347,552	36.5	137,830	14.4	50.9	
1953	418,861	41.6	110,781	11.0	52.6	
1954	368,764	42.6	120,271	13.9	56.5	
1955	375,872	40.0	108,748	11.6	51.6	

Over the period covered for sample companies, funds provided through the annual allowance for depreciation have been sufficient to finance some 35-45% of fixed assets required for both replacement and net expansion purposes. Retained profits available for the purpose have added another 10-15%. Both internal sources together have provided for some 50-55% of the cost of new capital acquisitions.

Decreases in working capital have not been included in the summary of internal sources set out in Table 6. It is recognized that proceeds of new bond and share issues may frequently be reflected in increased working capital temporarily until such time as capital outlays can conveniently be made. At this stage, working capital may show a decrease. During 1955 for sample companies, the increase in working capital arising from issues of funded debt was some 13% (\$54,917). The decrease in working capital to cover expenditures on fixed assets was 3% (\$27,916) of the total of such expenditures. Aside from these adjustments in working capital, the figures indicate that management

COST AND MANAGEMENT

has been able to finance consistently some 50-55% of fixed asset expenditures from the depreciation allowance supplemented by retained earnings.

External Sources of Funds

Table 7 summarizes the extent to which net proceeds from new security issues were utilized for the purchase of fixed assets.

Table 7
External Sources of Funds Utilized for Expenditures on
Fixed Assets for Sample Companies

Year	Funded Debt Issues		Preferred Share Issues		Common Share Issues		All Others	
	Amount	Percent Total Expendi- tures	Amount	Percent Total Expendi- tures	Amount	Percent Total Expendi- tures	Amount	Percent Total Expendi- tures
	\$000	%	\$000	%	\$000	%		%
1948	160,728	28.4	26,043	4.6	15,412	2.7		35.7
1949	64,870	13.3	3,413	.7	44,485	9.2		23.2
1950	63,963	13.8	6,880	1.5	57,232	12.3		27.6
1951	157,387	19.8	4,637	.7	85,400	10.7		31.2
1952	204,591	22.0	4,867	.4	56,602	6.0		28.4
1953	213,129	21.2	40,285	4.0	71,360	6.8		32.0
1954	181,892	21.0	22,474	2.6	40,166	4.6		28.2
1955	176,705	18.8	75,963	8.1	112,797	12.0		38.9

Definite trends are not yet discernible in the data comprising Table 7. A development which is thrown into relief however is that of the sharp rise in equity financing during 1955. New financing by means of both preferred and common stock issues reached unprecedented levels for the period considered. Moreover, the aggregate amount of funds raised jointly through these two sources exceeded that via the bond route for the first time in the period studied. Nor was this due to any great reduction in the amount of new bond financing which was well sustained despite some strengthening of interest rates. It is tempting to ask whether or not the changed pattern of financing is partly a beginning effect of the tax credit provided on common and preferred dividends received by shareholders as contrasted to the lack of any such benefit on interest in the hands of bondholders. An answer to this query will have to await the results of further investigation.

Summary and Outlook

The sustained growth in the size and tempo of Canadian business operations during the period studied has quite naturally been reflected in progressively higher levels of *aggregate* profits. It is also the case

TRENDS IN CANADIAN CORPORATE FINANCING SINCE 1948

that higher total profits have led to increasing total dividend distributions—but not necessarily to a higher proportion of profits distributed as dividends. This proportion has oscillated around 50% since 1948, and has shown no persistent tendency to increase. In fact, over the last three years, the proportion has dropped off somewhat in the face of unprecedented increases in working capital—including in large proportion cash and marketable securities. For Canadian business, the year 1955 like 1954 was a year of substantial build-up in liquidity. This has, of course, given grounds for worry to those charged with the governmental monetary and fiscal responsibilities of the nation over the past several months. The spending potential on the part of the business community is enormous as a result of this liquidity. Whereas increases in liquidity during 1954 arose largely from a retrenchment in the inventory and current liability position in an atmosphere of apprehension, this was not the case during 1955. As sales picked up in 1955, so did receivables and inventories in a substantial way along with moderate increases in current liabilities generally. In spite of the much greater increases in receivables and inventory than in current liabilities, sample businesses were still able to come up with an unprecedented addition to marketable securities held to the extent of some \$240 million over 1954. Buoyancy of profits, conservative pay-outs and favourable conditions of new (particularly equity) financing in 1955 all contributed to the achievement of a rather unusual combination, viz., a build-up in the cash or near-cash position of business in spite of the heavy demands for funds for expanding other current asset requirements as well as maintaining a near-record level of capital outlays. Hence once again in 1956 the business community is at least able, although not necessarily willing, to continue a sustained high level of expenditures on fixed and current (especially inventory) assets. There is little doubt but that this ability will be accompanied by a willingness to expand in an atmosphere of business anticipations much more favourable than that following 1954. From the detailed evidence pertaining to the financial condition of sample companies at the end of 1955, certainly Canadian business has never been in better condition to unleash a record level of expenditures.

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Designing a System for Property Accounting . . .

By JOHN A. WATSON

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It is not often that the accountant has a chance to design a property accounting system for a brand new plant. In the following article the author describes how his department proceeded when such a rare opportunity fell to its lot.

IT HAS always seemed to me that when accountants get together there is usually an eager willingness to discuss such things as standard cost systems, valuation of inventories, direct costing, what to do about over and under applied overhead and a considerable number of other accounting problems. But if the subject of property accounting is brought up, well . . ., it usually doesn't take very long before the discussion is back to standard costs. Likewise, if one refers to the very large library of accounting texts he usually finds that property accounting receives a significantly lesser treatment than many other accounting subjects. Yet, from the standpoint of the billions of dollars that business enterprises invest in their plant and equipment, good property accounting is very definitely needed.

Perhaps one of the reasons for the apparent paucity of information stems from the fact that many companies have been in business quite a number of years and have acquired and gradually added to their plant and equipment, working out and improving their property records as they went along. Under these circumstances it is extremely difficult to design and install a new property accounting system because it usually means that rather complete information has to be obtained on equipment acquired years before, which very often is either not available or difficult to obtain. In addition, if a new system is installed it may mean that a complete inventory of the property currently owned will be needed to serve as a point from which to start.

It is only occasionally that an opportunity arises for designing and installing a property accounting system for a brand new plant. This is the opportunity we were given when our company began to make plans for building new manufacturing facilities. We immediately felt that here was our chance to design the kind of system that would give us the things we lacked in our present system. With this in mind we set to work.

Organization and Kind of Business

Before going into a description of how we designed our new system it would be of some value to tell you a little about our organization and the kind of property accounting system we have been using. With this information some of the problems connected with maintaining our property records can be seen and a better evaluation and comparison of the new system can be made.

DESIGNING A SYSTEM FOR PROPERTY ACCOUNTING

Our company is divided into two main divisions. In one division we manufacture cellulose films from basic raw materials, employing a continuous chemical process. After the film has been produced it goes through certain finishing operations such as printing, shirring and inspecting in order to put it into a form which can be used by our customers. From the standpoint of maintaining property records the basic manufacturing operations pose the greatest problems because they are of a continuous flow type, which makes classification of the equipment into kinds, lives and cost centers rather difficult. The equipment used in the finishing operations is of a more conventional kind in that it can be more readily identified and classified as to cost centers.

In the other division we purchase several different types of plastic films and convert these films by sealing, printing, cutting and forming into bags, tubes and sheets that can be used for various types of packaging. For purposes of property accounting the plant and equipment used by this division are similar to that of the finishing departments in the cellulose division.

In addition to the separation of our company into divisions we also have separation by locations. In most cases an identification of property by location will also indicate the company division; however, this is not always true.

Present System

Because our company began business as a relatively small organization a number of years ago it was natural that the system for property accounting originally designed would not meet our needs as the company grew larger. Over the years the system has been revised and improved to take care of changing requirements. Our present system is constructed as follows:

1. Separate control accounts are maintained in the general ledger for land, buildings and equipment. These accounts control a subsidiary property ledger. A separate section is set aside for each of the above kinds of property.
2. Within the property ledger additional classifications are made. For example, equipment is broken down by departments and within each department by kinds of equipment such as tanks and piping, motors and wiring, shirring machines and furniture and fixtures.
3. Depreciation reserve accounts are combined with the asset to which it belongs on individual account cards.
4. Property additions can be made only by budget authorizations. A separate budget is set up for each equipment installation. All charges for the purchase of the equipment and installation costs are made to these budgets. When the equipment has been

COST AND MANAGEMENT

installed the budget is closed and charged to the appropriate equipment accounts.

5. All equipment transfers and disposals are authorized and accounted for by forms designed for that purpose.

Requirements of the New System

As we got into the work of designing the new system we first asked ourselves what we wanted the system to give us. We found that essentially we wanted the following things:

1. A sufficiently detailed record of the property owned for purposes of identification of the property both as to location and value. This would facilitate accounting for additions, disposals and transfers. It would also permit accurate identification for insurance purposes.
2. Classification by cost centers in order to make cost distributions of such expenses as depreciation, property taxes and insurance.
3. Classification according to property lives. One of the biggest problems concerning property accounting that accountants face is how to charge off the cost of the asset over some reasonable period of time. We wanted to be able to calculate depreciation by both the straight line and the declining balance methods.
4. Classification to permit assignment of responsibility and accountability. This was one of the serious defects of the system we had been using. In order to assign responsibility and accountability we sometimes had to create supplemental records for this purpose. With our new system we believe that by classifying property by cost centers much of this extra work can be eliminated.
5. Flexibility to allow for future expansion as our company continues to grow. As I mentioned earlier, our present system had been revised and improved over the years as the need arose. But making changes in an existing system has not been an easy task. Therefore, in designing our new system we wanted to allow for additional departments, divisions, locations or whatever other expansion we might experience.
6. Last of all we wanted to design a system that would be reasonably efficient and economical to operate. I'm sure we all realize that accounting information has a price and that at times we have to sacrifice some of this information in order to keep costs in line.

Numerical Classification System

One of the first things we went to work on was designing a system of numerical classification. In doing this we reasoned first that because of the amount of detail we expected to put into the system the numeri-

DESIGNING A SYSTEM FOR PROPERTY ACCOUNTING

cal classification would be fairly large, and second, that the system would therefore make a good application for tabulating equipment.

We did not encounter much difficulty in determining what the first digits of the classification would represent; however, as we got down to the more detailed classifications we found the going a little tougher. It took a good deal of work and cooperation with our engineering department to determine the many different kinds of equipment that go into each department, and to the operations, or cost centers, within each department. In the following paragraphs I will describe what each of the digits represents in the numerical classification we finally worked out.

Although our first property classification is not a part of the subsidiary equipment ledger account number I think it should be described in order to give you the complete breakdown of our property classification from the broadest to the most detailed. As in most accounting systems our broadest classifications are the accounts for land, buildings, and equipment that appear in the general ledger. These three accounts control the subsidiary equipment ledger.

In order to describe the classifications within the subsidiary equipment ledger I will give you the breakdown of plant equipment only. Land and buildings are classified in a similar manner.

The first digit of our account number stands for plant location. In most instances only one division of the company will be involved in the operations at a single plant location, therefore location will usually indicate the company division. In those instances where two or more divisions are combined in one location separation between the divisions will have to be accomplished by some method of distribution.

The second and third digits represent the department in which the equipment is located. Two digits have been provided to accommodate a total of 99 departments. We will probably never need that many numbers but we will need more than nine, therefore we found it necessary to provide two digits.

The fourth and fifth digits indicate the manufacturing operation, or cost center, within a department. This is the point at which we needed a good deal of assistance from our engineering department in order to determine what the individual operations would be. We could not rely on our own knowledge of operations within our present plant because a number of changes were being incorporated into the new facilities.

The sixth and seventh digits represent the kind of equipment within a manufacturing operation or cost center. Examples of this would be equipment such as steeping presses, shirring machines, motors and sealing machines.

COST AND MANAGEMENT

The eighth and ninth digits are for the year of acquisition, and the remaining digits indicate the serial numbers of the individual pieces of equipment, if any. In the type of manufacturing we engage in there is some equipment such as motors, desks, instruments and various kinds of machines that will either have a serial number at the time of acquisition or will be assigned a number for purposes of identification and control. There are also other types of equipment that will not carry serial numbers for reasons such as their size, complexity or problems of control.

The following illustration gives you an example of a complete equipment number with an identification of each of the digits:

<i>Plant location</i>	<i>Department</i>	<i>Operation or Cost center</i>	<i>Kind of equipment</i>	<i>Year of acquisition</i>	<i>Serial No.</i>
1	23	45	67	56	1234

Permanent Equipment Ledger

Although we have designed our system so that tabulating equipment will take care of much of the detail work we still require a permanent equipment ledger to give us the historical record we will need. The ledger will consist of an account card for each kind of equipment and the year acquired. Account cards for each piece of equipment will be maintained in a tabulating card file. By limiting our permanent equipment ledger to the classification covering kinds of equipment rather than pieces of equipment we will be able to have all of the permanent historical information we will need without having to encumber the ledger with a large number of accounts. In the section covering how the system operates you will see how this works.

In addition to the records for each group of assets the equipment ledger will also include a record of depreciation reserves for each of these asset groups.

Tabulating Records

As described in the preceding section the primary purpose of the tabulating records is to eliminate from our permanent equipment ledger a large volume of account cards. Actually the tabulating records go one step further than the permanent equipment ledger in that they include an account card for each piece of equipment. The sum total of all of the cards balances with the total of the permanent equipment ledger.

The tabulating records are divided into an active and an inactive file. The active file includes all equipment currently owned by the

DESIGNING A SYSTEM FOR PROPERTY ACCOUNTING

company while the inactive file consists of equipment that has been disposed of and is no longer owned by the company. The need for the active file is readily apparent whereas it should be explained that the inactive file has to be maintained to provide permanent supporting records for the equipment ledger.

Operation of the System

Along with a description of the system of numerical classification and the kind of property records we will have, a discussion of how the system operates is also needed to give a more complete picture. To do this I will describe the procedure from the time funds are appropriated for capital expenditure until the property is acquired, postings are made to the appropriate records and the property is subsequently retired.

1. The property accounting procedure starts at the time management makes a request to the board of directors for an appropriation of funds for a capital equipment programme.
2. After the appropriations have been made individual budgets are issued as required for specific equipment expenditures within these appropriations. Each budget is broken down into the kinds of equipment being acquired. We try to restrict each budget to one operation within a department. In this way we can immediately make the job of classifying the equipment for subsequent posting to property records a little easier.
3. When a budget has been approved we immediately set up an account card to record all charges against the budget. The charges usually consist of outside purchases, engineering costs, installation costs and stores withdrawals. Attention is constantly given to classifying these charges according to the individual pieces of equipment being acquired.
4. After the equipment covered by the budget has been installed the budget is closed out and the charges are summarized by the individual pieces of equipment.
5. The closed budget is then posted to the appropriate equipment accounts in the permanent equipment ledger. At the same time the tabulating department also punches a card for each piece of equipment.
6. Whenever a piece of equipment is sold, scrapped, transferred or otherwise moved an appropriate form designed to authorize and account for the transaction is prepared. On this form the equipment is sufficiently identified, either by serial number or other means, so that the equipment can be located in the property records. From this form the tabulating department sorts out the appropriate equipment account card. The information shown on this tabulating card also facilitates the identification of the property in the permanent equipment ledger.

COST AND MANAGEMENT

7. At the present time we intend to calculate depreciation expenses, both as to amounts and distributions, from the records included in our permanent equipment ledger. At a later date if we find that we will benefit by doing this work on tabulating equipment we will make a transfer of this work.

In conclusion it should be noted that up to this time we have carried the system through the design stage and are currently in the process of making the installation. Fundamentally we believe that we will have an improved system that will give us much better control of our plant and equipment. At the same time we also feel sure that as we gain experience with the system we will have changes and improvements to make.

SEVENTH INTERNATIONAL CONGRESS OF ACCOUNTANTS, 1957

Registrations are now being taken for the Seventh International Congress of Accountants to be held in Amsterdam September 9th to 13th, 1957.

Two of the five days of the conference will be devoted to business sessions, which will open with the topic "Principles for the Accountants' Profession." Later sessions, according to the provisional programme, will deal with such subjects as verifying the existence of assets, budgeting, business organization and the accountant, internal auditing and the ascertainment of profit in business. Languages used throughout the conference will be English, French, German and Dutch.

Entertainment plans include a government reception, tours and excursions, a round trip through the Amsterdam canals and a concert by the "Concertgebouw" orchestra. A grand ball will close the proceedings on September 13th.

Those planning to attend the conference may register through the Society of Industrial and Cost Accountants, 31 Walnut St. South, Hamilton, Ontario. Registration details should include name, address, date of birth, accounting society affiliations and names of companions if any.

Student Section . . .

Comments by C. C. Gourlay.

EXAMINATIONS, 1956 ACCOUNTING I.

QUESTION VII (10 marks)

A business maintains in its general ledger the following control accounts:—

Accounts Receivable	A to K
Accounts Receivable	L to Z
Accounts Payable	A to K
Accounts Payable	L to Z

During the month ended 30th April, 1956, the following occurred:

- A sales invoice of \$82 was entered in the book of original entry as \$82 and posted as \$92 to the debit of Waltons Ltd., in the L to Z section of Accounts Receivable ledger.
- A credit note of \$36 was entered as \$26 in the book of original entry and posted as \$26 to the debit of Bentalls Ltd., in the A to K section of the Accounts Payable ledger.
- A new account of James Williamson & Co., was wrongly filed according to christian name instead of surname in the Accounts Receivable ledger. The amount owing at 30th April, 1956, was \$198.
- A payment was made to J. Sprott & Co., in payment of an Accounts Payable account balance of \$396 less an Accounts Receivable account balance of \$56.

REQUIRED:

- The correcting entry and/or other action required in (a), (b), and (c).
- The entries on the firm's books in the case of (d).

SOLUTION TO QUESTION VII.

(a) Journal.

Sales	\$10	
Accounts Receivable A-K		\$10

Subsidiary

Credit Waltons Ltd.	\$10
--------------------------	------

(b) Journal.

Accounts Payable A-K	\$10	
Purchases		\$10

Subsidiary

Debit Bentalls Ltd.	\$10
--------------------------	------

(c) Journal.

No entry.

Subsidiary

Refile the account in the L to Z Accounts Receivable ledger.

COST AND MANAGEMENT

(d) Accounts Payable L to Z	\$396	
Accounts Receivable L to Z		\$56
Bank		\$340

COMMENTS QUESTION VII.

This question was fairly well done. Students lost marks generally by omitting parts of the answers.

ACCOUNTING II.

Comments by Prof. J. D. Campbell

QUESTION III (15 marks)

Shoppers Limited has two branch stores, A and B, which are supplied with merchandise at cost by the head office. Head Office pays all expenses; the branches keep customers' ledgers and controlling accounts and remit all cash to head office daily.

The following figures have been extracted from the returns made by the branches and from the books of head office for the year 1955.

	Store A	Store B
Accounts receivable, 1st January, 1955	\$ 30,000	\$ 25,000
Inventories, 1st January, 1955	20,000	19,000
Sales—credit	96,000	100,000
—cash	45,000	90,000
Returned Sales	800	1,000
Cash received from customers	86,000	84,000
Drafts drawn on customers	8,000	11,000
Drafts drawn on customers—dishonoured ..	2,000	1,000
Bad debts written off	1,200	1,000
Merchandise from head office	90,000	112,000
Expenses—direct	30,000	40,000
Inventories, 31st December, 1955	25,000	15,000
Distribution of head office overhead	8,000	10,000

REQUIRED:

Prepare:

- (a) Profit and loss statement for each branch for 1955
- (b) Customers' ledger control account for each branch
- (c) Branch current accounts in head office books.

SOLUTION TO QUESTION III.

- (a) Shoppers Limited
Profit and Loss Statement for the year 1955

	Store A	Store B
Sales—Credit	\$96,000	\$ 100,000
Cash	45,000	90,000
	<hr/>	<hr/>
	\$141,000	\$190,000
Less returns	800	1,000
	<hr/>	<hr/>
	\$140,200	\$189,000

STUDENT SECTION

Deduct Cost of Goods Sold

Inventory 1st Jan.				
1955	\$ 20,000		\$19,000	
Purchases	90,000		112,000	
	<u>\$110,000</u>		<u>\$131,000</u>	
Inventory, 31st Dec. 1955	25,000	85,000	15,000	116,000
	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Gross Profit.....		\$55,200		\$73,000
Deduct				
Expenses—direct..	30,000		40,000	
Proportion of H.O. O/H	8,000		10,000	
Bad debts written off	1,200	39,200	1,000	51,000
	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Net profit for year..		\$16,000		\$22,000

(b) Sales Ledgers Controlling Accounts

	Dr.	Cr.	Dr.	Cr.
Bal. 1st Jan. 1955....	\$30,000		\$25,000	
Credit Sales	96,000		100,000	
Cash received		\$86,000		\$84,000
Drafts drawn		8,000		11,000
Drafts dishonoured..	2,000		1,000	
Sales returns		800		1,000
Accounts written off		1,200		1,000
Bal. 31st Dec. 1955..		32,000		29,000
	<u>\$128,000</u>	<u>\$128,000</u>	<u>\$126,000</u>	<u>\$126,000</u>

(c) Branch Current Accounts

	Dr.	Cr.	Dr.	Cr.
Balance, 1st Jan. '55				
Accounts receivable	(\$30,000		(\$25,000	
Inventory	(20,000		(19,000	
Merchandise shipped	90,000		112,000	
Expenses	30,000		40,000	
Proportion H/O Exp.	8,000		9,000	
Cash received		\$137,000		\$184,000
Profit for year	16,000		22,000	

COMMENTS QUESTION III.

The major difficulty encountered in the solutions presented to this question arose in the area of interpretation. Where the student indicated the interpretation which he had taken and carried through

COST AND MANAGEMENT

his solution on the basis of that interpretation no penalty was imposed.

The division (c) of the question was poorly answered, either being incomplete or due to a failure to read the question carefully. The question required that you present a copy of the branch account on the head office records, not the head office account on the branch records. In a large number of cases the account presented was not complete due to a failure to record the profit for the year. The balance in the branch account at the end of the year could be reconciled with the balances in the branch inventory and accounts receivable at that date. This reconciliation was presented in a few cases.

Numerous mechanical errors occurred and in presenting the profit and loss statement several students omitted the proportion of the head office overhead.

OBITUARY

With deepest regret we announce the death of H. E. Adams, R.I.A., formerly of the Hamilton Chapter. Mr. Adams was employed by Smith and Stone Ltd., Georgetown, Ont.
